CLAIMS

What is claimed is:

1. A multilevel texture processing method for mapping multiple images onto a 3D model with a texture mapping, the method comprising the steps of:

providing an image to the 3D model;

converting the image and the texture mapping to a common spatial coordinate system and dividing them into a plurality of polygons;

comparing the image with the texture mapping within the spatial coordinate system and extracting overlapped polygons;

using the pixel intensity of the overlapped polygons to compute a statistics mean for adjusting the pixel intensity of the image accordingly;

using a prescribed condition to select the texture of one of the image and the texture mapping as the texture of the polygon;

smoothing the texture of the polygon;

making the pixels inside the plaquette continuous; and

restoring the polygon and outputting the 3D model.

2. The method of claim 1, wherein the prescribed condition is selected from the group consisting of resolution, polygon orientation, and camera viewing perspective.

3. The method of claim 1, wherein the step of smoothing the texture of the polygon includes texture normalization and texture blurring.

4. The method of claim 3, wherein the texture normalization uses the pixel

intensities of the polygons in both the image and the texture mapping to compute a weighted average for adjustment.

5. The method of claim 3, wherein the texture blurring uses the textures of the polygon and its neighboring polygons to compute a weighted average for adjustment.

6. The method of claim 1, wherein the step of making the pixels of the polygon texture continuous is achieved by mixing colors with the neighboring polygons.

7. The method of claim 6, wherein the step of mixing colors includes the steps of:

extracting a pixel on the border of the polygon with discontinuous colors; and

computing a weighted average of the intensities of the pixel and its nearest neighboring pixels as a new intensity of the pixel.

8. The method of claim 7, wherein the step of computing a weighted average of the intensities of the pixel and its neighboring pixels as a new intensity of the pixel is followed by the steps of:

computing the difference between the weighted average intensity and the original pixel intensity; and

using the pixel intensity difference to adjust the intensities of the rest pixels inside the polygonal texture.